METHODS TO COOL A FUEL CELL AND IF DESIRED HEAT A HYBRID BED SIMULTANEOUSLY

ABSTRACT OF THE DISCLOSURE

A technique for rejecting heat from a fuel cell stack. Heated stack coolant from the fuel cell stack is directed to a heat pump module where it is compressed to raise its temperature. The heated and compressed coolant is then directed through a radiator that cools the coolant through interaction with ambient air. The coolant is then sent through an expansion aperture to reduce its pressure, and thus, further reduce its temperature before it is sent back to the fuel cell stack to collect waste heat therefrom. The heated and compressed coolant can be sent to hydride bed to release hydrogen therefrom before it is sent to the radiator. In one embodiment, the coolant is hydrogen.